

## CLAIMS

1. An isolated polynucleotide comprising a nucleic acid sequence encoding geraniol synthase (GES), said GES being capable of converting geranyl diphosphate to geraniol.  
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2. An isolated polynucleotide comprising a nucleic acid sequence selected from the group consisting of
  - a. the nucleic acid sequence of SEQ ID NO:1;
  - 10 b. the complement of SEQ ID NO:1;
  - c. a nucleic acid sequence which is at least 90% homologous to SEQ ID NO:1; and
  - d. a nucleic acid sequence capable of hybridizing to either (a) or (b).
- 15 3. The isolated polynucleotide according to claim 1 encoding the amino acid sequence of SEQ ID NO:2.
4. The isolated polynucleotide according to claim 1 encoding an amino acid sequence which is at least 60%, preferably at least 70%, more preferably at least 80% or more, most preferably at least 90% homologous (similar +  
20 identical amino acids) to the amino acid sequence of SEQ ID NO:2.
5. The isolated polynucleotide according to claim 1 encoding an amino acid sequence selected from the group consisting of SEQ ID NO:2, fragments, derivatives and analogs thereof  
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6. A polypeptide having GES activity, said activity being characterized by converting geranyl diphosphate (GDP) to geraniol.
- 30 7. The polypeptide according to claim 6 having the sequence of SEQ ID NO:2.

8. The polypeptide according to claim 6 which is at least 60%, preferably at least 70%, more preferably at least 80% or more, most preferably at least 90% homologous (similar + identical amino acids) to the amino acid sequence set forth in SEQ ID NO:2.
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9. The polypeptide according to claim 6 selected from the group consisting of a polypeptide having the amino acid sequence of SEQ ID NO:2 and fragments, derivatives and analogs thereof.
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10. An expression vector comprising the polynucleotide according to any one of claims 1-5.
11. A host cell comprising the expression vector according to claim 10.
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12. A method for producing recombinant GES, the method comprising:
- a. culturing the host cell according to claim 11 under conditions suitable for the expression of GES; and
  - b. recovering GES from the host cell culture.
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13. A method for producing geraniol, the method comprising:
- a. culturing the host cell according to claim 11 under conditions suitable for the expression and activity of the GES; and
  - b. recovering geraniol from the host cell culture.
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14. A method for producing geraniol metabolites in the terpene biosynthesis pathway, the method comprising:
- a. culturing the host cell according to claim 11 under conditions suitable for the expression and activity of the GES; and
  - b. recovering geraniol metabolites from the host cell culture.
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15. The method according to claim 16, wherein the geraniol metabolites are geranial and neral.

16. A prokaryotic organism comprising a polynucleotide sequence according to any one of claims 1-5 stably integrated into its genome.
- 5 17. Use of geraniol obtained by the method according to claim 13 in a product selected from the group consisting of agricultural, cosmetic and food products.
- 10 18. Use of a geraniol metabolite obtained by the method according to claim 14 in a product selected from the group consisting of agricultural, cosmetic and food products.